IN THE CLAIMS

Please amend the claims as follows:

Claims 1-30 (Canceled).

Claim 31 (Currently Amended): A power-splitting infinitely variable transmission ~~with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on the mode of operation thereof~~, comprising:

a primary power train on which there is disposed a compound gearset including a first epicyclic gearset and a second epicyclic gearset;

a secondary power train provided with an epicyclic gearset associated with each electric machine of an electric variator; and

a mode-changing system configured to selectively immobilize at least one spinning element of one of the epicyclic gearsets associated with one of the electric machines, such that at least one mode of operation of the infinitely variable transmission is selected among a plurality of modes of operation, wherein

[[the]] an internal combustion engine is connected via a reducing stage to a ring gear of the first epicyclic gearset and to a planet carrier of the second epicyclic gearset of a gearbox.

Claim 32 (Currently Amended): A transmission according to claim 31, wherein

[[the]] vehicle wheels are connected to the gearbox via a reducing stage [[of]] having a first gear ratio [[$K_0$]], one access of which is coupled respectively to a planet carrier of the first epicyclic gearset and to a ring gear of the second epicyclic gearset~~, and~~

~~the first and second epicyclic gearsets constitute a compound epicyclic gearset disposed on the primary power-splitting pathway~~.

Claim 33 (Previously Presented): A transmission according to claim 32, wherein

a first electric machine of the electric variator is connected to a reducing stage coupled to a sun gear of the first epicyclic gearset and to a ring gear of a third epicyclic gearset,

a sun gear of the third epicyclic gearset is coupled to a ring gear of a fourth epicyclic gearset,

the sun gear of the third epicyclic gearset and the ring gear of the fourth epicyclic gearset are connected to a frame via a first brake, and

a planet carrier of the third epicyclic gearset is coupled to the frame by a second brake.

Claim 34 (Currently Amended): A transmission according to claim 32, wherein a second electric machine of the electric variator is coupled via a reducing stage with a second gear ratio [[$K_{e2}$]] to a fourth epicyclic gearset by a sun gear of the fourth epicyclic gearset.

Claim 35 (Currently Amended): A transmission according to claim 31, wherein

the reducing stage is provided with a pinion engaged with a toothing mounted on a bearing that is free to rotate around a central gearbox shaft integral with the planet carrier of the second ~~compound~~ epicyclic gearset of the primary power train, and

a planet carrier of the first epicyclic gearset is integral with a ring gear of the second epicyclic gearset~~, the ring gear of the second epicyclic gearset being connected to or integral with the planet carrier~~.

Claim 36 (Currently Amended): A transmission according to claim 35, wherein ~~the~~ vehicle wheels ~~of the vehicle~~ are coupled on a shaft via a pinion to a toothing, integral with the ring gear of the second epicyclic gearset.

Claim 37 (Currently Amended): A transmission according to claim 35, wherein

the secondary power train is provided with third and fourth epicyclic gearsets respectively, ~~for coupling~~ to couple the secondary power train to the electric variator, to the mode-changing system, and to the primary power train,

the third epicyclic gearset is provided with a sun gear, a ring gear, and a planet carrier integral with a second brake,

the fourth epicyclic gearset is provided with a planet carrier, which couples a sun gear of the fourth epicyclic gearset to a ring gear of the fourth epicyclic gearset,

the sun gear of the third epicyclic gearset is integral with the ring gear of the fourth epicyclic gearset, and the ring gear of the third epicyclic gearset is integral with the sun gear of the fourth epicyclic gearset,

the central gearbox shaft ~~of the gearbox~~ terminates at an opposite end relative to the internal combustion engine by a pinion connected to a second electric machine, and

[[the]] a sun gear of the second epicyclic gearset of the compound gearset carries an external toothing, which is coupled to a pinion integral with a shaft of a rotor of a first electric machine of the electric variator.

Claim 38 (Currently Amended): A transmission according to claim 37, wherein the sun gear of the third epicyclic gearset and the ring gear of the fourth epicyclic gearset are integral with a first lining of [[a]] the first brake, a second lining of the first brake being integral with a gearbox case and a brake actuator, ~~making it possible to~~ such that the brake actuator may activate or not activate braking by bringing the ~~two linings~~ first lining and the second lining together in response to an adjusting signal from a mode-of-operation controller of the transmission.

Claim 39 (Currently Amended): A transmission according to claim 37, wherein the planet carrier of the third epicyclic gearset, integral with the ring gear of the fourth epicyclic gearset, is integral with a first lining of [[a]] the second brake, a second lining of the second brake being integral with a gearbox case, and a brake actuator, ~~associated with a brake of the planet carrier, making it possible to~~ such that the brake actuator may activate or not activate braking thereof by bringing the ~~two linings~~ first lining and the second lining together in response to an adjusting signal from a mode-of-operation controller of the transmission.

Claim 40 (Currently Amended): A transmission according to claim 31, further comprising:

an operating controller including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of the ~~two~~ electric machines such that, for each ~~machine~~ of the electric machines, there is determined a mode of operation either as a motor or generator, a speed of rotation ~~and/or~~ or a torque or else an armature voltage ~~and/or~~ or an armature current, ~~especially~~ in relation with a device for management of an electrical energy accumulator, the electric machine operating controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals for pilot-control circuits of the electric machines, and

a transmission-mode-changing controller, which determines an open or closed state of a first brake ~~and/or~~ or of a second brake such that one mode among at least two modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller.

Claim 41 (Currently Amended): A power-splitting infinitely variable transmission ~~with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on the mode of operation thereof~~, comprising:

a third epicyclic gearset in series with one of ~~the two~~ a first epicyclic ~~gearsets~~ gearset and a second epicyclic gearset on one of [[the]] two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, the third epicyclic gearset cooperating with [[the]] an adjusting means such that, in a first mode of [[the]] two modes of operation of the transmission, a sun gear, a ring gear, and a planet carrier of the third epicyclic gearset are spinning at [[the]] a same speed, wherein,

on a first power train of the two power trains, the vehicle wheels are connected via [[the]] a first reducing stage to a planet carrier of [[a]] the first epicyclic gearset, and a sun gear of ~~which~~ the first epicyclic gearset is connected directly to a shaft of the internal combustion engine, and

a second power train of the two power trains is coupled to the first epicyclic gearset by [[the]] a ring gear of the first epicyclic gearset.

Claim 42 (Canceled).

Claim 43 (Previously Presented): A transmission according to claim 41, wherein

the ring gear of the third epicyclic gearset is connected to a ring gear of the second epicyclic gearset, and

the sun gear of the third epicyclic gearset is integral both with the ring gear of the first epicyclic gearset and with a rotor of a first electric machine.

Claim 44 (Currently Amended): A transmission according to claim 43, wherein a planet carrier of the second epicyclic gearset is connected to the internal combustion engine via [[the]] a second reducing stage, [[the]] and a reduction ratio of ~~which~~ the second reducing stage can be matched to a mechanical power and to an optimal speed of rotation of the internal combustion engine to which the second reducing stage is connected.

Claim 45 (Previously Presented): A transmission according to claim 44, wherein a sun gear of the second epicyclic gearset is connected to a rotor of a second electric machine.

Claim 46 (Previously Presented): A transmission according to claim 43, wherein, by activation of a mode-changing system, the planet carrier of the third epicyclic gearset is immobilized on a case via a brake disposed between the case and the planet carrier of the third epicyclic gearset.

Claim 47 (Currently Amended): A transmission according to claim 46, wherein the planet carrier of the third epicyclic gearset is connected to [[a]] the sun gear of the third epicyclic gearset via a clutch adjusted by the mode-changing system.

Claim 48 (Currently Amended): A transmission according to claim 41, wherein

[[a]] the second epicyclic gearset and the third epicyclic gearset are provided with a common ring gear, in that the planet carrier of the third epicyclic gearset spins freely around a shaft of the sun gear of the third epicyclic gearset, the shaft of the sun gear of the third epicyclic gearset being connected to a shaft carrying the common ring gear of the second epicyclic gearset and the third epicyclic gearset, in that [[the]] a planet carrier of the second epicyclic gearset spins freely around a shaft of a sun gear of the second epicyclic gearset, the shaft of the sun gear of the second epicyclic gearset being connected to a shaft of a rotor of a second electric machine, and

the planet carrier of the first epicyclic gearset spins freely around a shaft of the sun gear of the first epicyclic gearset, the shaft of the sun gear of the first epicyclic gearset being integral at two ends with [[the]] an engine shaft of the internal combustion engine and with the sun gear of the first epicyclic gearset.

Claim 49 (Currently Amended): A transmission according to claim 48, wherein a first electric machine is disposed outside of a common axis of the internal combustion engine, of

the first, second, and third epicyclic gearsets, respectively, and of the second electric machine, a rotor shaft of the first electric machine being integral with a pinion engaged on an external toothing of [[a]] the ring gear of the first epicyclic gearset.

Claim 50 (Currently Amended): A transmission according to claim 41, further comprising:

an operating controller including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of ~~the two~~ electric machines of the transmission such that, for each ~~machine~~ of the electric machines, there is determined a mode of operation either as a motor or generator, a speed of rotation ~~and/or~~ or a torque or else an armature voltage ~~and/or~~ or an armature current, ~~especially~~ in relation with a device for management of an electrical energy accumulator, the electric machine operating controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals for pilot-control circuits of the electric machines, and

a transmission-mode-changing controller, which determines an open or closed state of a clutch ~~and/or~~ or of a brake such that one mode ~~among~~ of the at least two modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller.

Claim 51 (Currently Amended): A power-splitting infinitely variable transmission ~~with two modes of operation, wherein constituent elements thereof are distributed between two power trains connecting an internal combustion engine in a parallel manner to wheels of a vehicle, including two epicyclic gearsets, two electric machines, one reducing stage, and adjusting means that distribute power between the two power trains differently depending on a mode of operation thereof~~, comprising:

a first compound gearset configured to connect [[the]] an internal combustion engine to [[the]] vehicle wheels along a first power-splitting train;

a second compound gearset that, along with the first compound gearset, is configured to achieve power splitting via a second power-splitting train; and

a simple gearset configured to recombine the first and second ~~power-steering~~ power-splitting trains, wherein

the first compound gearset, the second compound gearset, and the ~~single~~ simple gearset achieve a system for changing modes between at least two modes of operation of the infinitely variable transmission, and

the internal combustion engine is connected to a first epicyclic gearset of the first compound gearset.

Claim 52 (Currently Amended): A transmission according to claim 51, wherein

the first compound gearset is provided with the first epicyclic gearset to which the internal combustion engine is connected via a sun gear of the first epicyclic gearset,

a planet carrier of the first epicyclic gearset being connected to a reducing stage, the output of which is connected to driving wheels of the vehicle wheels and to a planet carrier of a second epicyclic gearset of the first compound gearset,

ring gears of the first and second epicyclic gearsets respectively ~~being~~ are connected together, and

common movement of the ring gears ~~being~~ is transmitted at a coupling over the ~~secondary~~ second power-splitting train.

Claim 53 (Currently Amended): A transmission according to claim 52, wherein

a sun gear of the second epicyclic gearset is connected to a planet carrier of the simple epicyclic gearset ~~whose~~ and a sun gear of the simple epicyclic gearset is connected to a rotary shaft of a second electric machine,

a first electric machine of an electric variator of the transmission is coupled via an output shaft of the first electric machine to a reducing stage connected both to the ring gears of the first and second epicyclic gearsets of the first compound gearset, as well as to a ring gear of a first epicyclic gearset of the second compound gearset, and

the second compound gearset includes a second epicyclic gearset and is configured in such a way that planet carriers and sun gears of the ~~two~~ first and second epicyclic gearsets of the second compound gearset are coupled to one another in that the planet carriers of the second compound gearset are temporarily integral with a frame or chassis by means of a first brake, while a ring gear of the second epicyclic gearset of the second compound gearset can be made integral with the chassis or fixed point by means of a second brake, and in that the sun gears of the first and second epicyclic gearsets of the second compound gearset are connected to a ring gear of [[the]] a third epicyclic gearset.

Claim 54 (Currently Amended): A transmission according to claim 52, wherein

an output shaft of the internal combustion engine is aligned with a common shaft of rotation of the first compound gearset, of [[the]] a compound mode-changing gearset, and of

the simple gearset for recombination of the ~~two splitting trains~~ first power-splitting train and the second power-splitting train,

the internal combustion engine is directly connected without intermediate reducing stage via the output shaft of the internal combustion engine to the sun gear of the first epicyclic gearset of the first compound gearset, the planet carrier of the first compound gearset being double and common to the ~~two~~ first and second epicyclic gearsets of the first compound gearset, the planet carrier of the first compound gearset being spun on the sun gear of the first epicyclic gearset of the first compound gearset, fixed at an end of the output shaft of the internal combustion engine, spinning on the sun gear of the second epicyclic gearset of the first compound gearset, and fixed on a first part of the common shaft,

a second part of the common shaft is aligned with the output shaft and carries [[the]] a planet carrier of the simple gearset,

the common shaft can rotate freely on two bearings and carries

the ring ~~gear, common to~~ gears of the ~~two~~ first and second epicyclic gearsets of the first compound gearset, and the ring gear of [[the]] a first epicyclic gearset of the second compound gearset, and

a sun gear of the second compound gearset, which is integral with a ring gear of the simple gearset.

Claim 55 (Currently Amended): A transmission according to claim 54, wherein

the ring ~~gear~~ gears of the ~~two~~ first and second epicyclic gearsets of the first compound gearset [[is]] are provided with a single toothing to drive a single pinion of the sun gear mounted on the planet carrier of the first compound gearset, each planet gear of the planet carrier of the first compound gearset being double, meaning that the planet carrier of the first compound gearset carries

a first pinion engaged between the sun gear of the first epicyclic gearset and the single internal toothing of the ring ~~gear, common to~~ gears of the ~~two~~ first and second epicyclic gearsets, and

a second pinion integral with the first pinion via their common spindle and engaged on the sun gear of the second epicyclic gearset of the first compound gearset, and

the planet carrier of the first compound gearset is mounted to rotate freely on a ~~suitable~~ bearing disposed on the output shaft of the internal combustion engine and is integral with a toothed gear engaged on a pinion integral with the vehicle wheels.

Claim 56 (Currently Amended): A transmission according to claim 55, wherein the ring ~~gear~~ gears of the first compound gearset also carries an external toothing, which is engaged with a pinion mounted at an end of a shaft of a rotor of a first electric machine of an electric variator.

Claim 57 (Currently Amended): A transmission according to claim 56, wherein

the sun gear common to the ~~two~~ first epicyclic and a second epicyclic ~~gearsets~~ gearset of the second compound gearset is provided with a single external toothing to drive a single pinion of the planet gear mounted on [[the]] a planet carrier of the second compound gearset, each planet gear of the planet carrier of the second compound gearset being double, meaning that the planet carrier of the second compound gearset carries

a first pinion engaged on the sun gear and on an internal toothing of the ring gear of the first epicyclic gearset of the second compound gearset integral with the ~~common~~ ring ~~gear~~ gears of the first compound gearset, and

a second pinion, integral with the first pinion via ~~their~~ a common spindle of the first pinion and the second pinion and engaged on an internal toothing of [[the]] a ring gear of the second epicyclic gearset of the second compound gearset, and

the planet carrier of the second compound gearset is mounted to rotate freely between the sun gear and the ring gear of [[its]] the first epicyclic gearset of the second compound gearset.

Claim 58 (Currently Amended): A transmission according to claim 57, wherein a shaft carries the planet carrier of the simple gearset, which spins on [[the]] a sun gear of the simple epicyclic gearset, ~~whose~~ and a shaft[[,]] of the simple epicyclic gearset is aligned with the shaft of the planet gear[[,]] and is connected to a rotor of a second electric machine.

Claim 59 (Currently Amended): A transmission according to claim 58, wherein the ~~mode-changing~~ system for changing modes includes

a first brake provided with a first lining integral with the ring gear of the second epicyclic gearset of the second compound gearset and a second lining integral with a case of a gearbox, a brake actuator being disposed between the ~~two linings~~ first and second lining of the first brake in such a way that, in response to an adjusting signal from a transmission-mode-changing controller, the first brake is either opened or clamped, and

a second brake provided with a first lining integral with the planet carrier of the second compound gearset and a second lining integral with the case of the gearbox, a brake actuator being disposed between the ~~two linings~~ first and second lining of the second brake in such a way that, in response to the adjusting signal from

the transmission-mode-changing controller, the second brake is either opened or clamped.

Claim 60 (Currently Amended): A transmission according to claim 51, further comprising:

an operating controller connected by a bus to different sensors of a state of operation of [[the]] a vehicle as well as to sensors for detecting an intent of an operator and to a plurality of controllers, including

a motive power unit controller of an operating point of a motive power unit as a function of predetermined stresses,

an engine controller of an operating point of the internal combustion engine configured to receive an operating point target value from the operating controller and configured to generate adjusting signals suitable for actuators for determination of the operating point of the internal combustion engine,

an electric machine operating controller of [[the]] two electric machines in such a way that, for each ~~machine~~ of the two electric machines, there is determined a mode of operation either as a motor or generator, a speed of rotation ~~and/or~~ or a torque or else an armature voltage ~~and/or~~ or an armature current, especially in relation with a device for management of an electrical energy accumulator, the electric machine operating controller receiving a target value of the operating point from the operating controller and producing suitable adjusting signals for pilot-control circuits of the two electric machines in order to determine their respective operating points according to a four-quadrant current-voltage rule l, and

a transmission-mode-changing controller, which determines an open or closed state of a first brake ~~and/or~~ or of a second brake in such a way that one mode among

at least three modes of operation of the infinitely variable transmission is selected by an adjusting signal of the operating controller, among which

in a first mode of operation of the at least three modes of operation, the first brake or the second brake blocks [[the]] a planet carrier of ~~the two~~ first and second epicyclic gearsets of the second compound gearset, [[the]] a ring gear of the second epicyclic gearset spins freely, and the second compound gearset functions as a simple gearset composed of [[the]] a ring gear of first epicyclic gearset, of [[the]] a common planet carrier of the second compound gearset, and of [[the]] a common sun gear of the second compound gearset,

in a second mode of operation of the at least three modes of operation, the mode-changing system is disposed in such a way that the ~~two brakes~~ the first brake and the second brake are both clamped, all elements of the second compound gearset ~~being~~ are blocked in such a way that the two electric machines are directly connected to the ~~primary~~ first power-splitting train, and either one or the other or both of the two electric machines can operate both as a generator and as a motor, and

in a third mode of operation of the at least three modes of operation, the first brake is open and the second brake is clamped, in such a way that the ring gear of the second epicyclic gearset of the second compound gearset is braked and functions as a support point.